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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,541	02/26/2002	Detlef Schmidt	056982/0006	7725

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EXAMINER	
WALLING, MEAGAN S	
ART UNIT	**PAPER NUMBER**
2863	

DATE MAILED: 11/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,541	SCHMIDT ET AL.	
	Examiner	Art Unit	
	Meagan S Walling	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5,7,8,13,15-35,37 and 39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20-26 and 30* is/are allowed.

6)☒ Claim(s) *1,3-5,7,8,13,15,32-35,37 and 39* is/are rejected.

7)☒ Claim(s) *16-19,27-29 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3, 6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boesch et al. (US 5,721,528) in view of Eckelt (US 5,206,643).

Regarding claim 1, Boesch et al. teaches using wheel displacement sensors to detect the occurrence of a flat or low tire inflation (column 2, lines 21-25).

Boesch et al. does not teach counting wheel sensor signal pulses to determine the wheel displacement or distance traveled by the vehicle (current claim 1).

Eckelt teaches counting wheel pulses to determine the distance traveled (column 5, lines 22-27).

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Boesch et al. with the teachings of Eckelt to use wheel pulses to determine the tire pressure of a vehicle. The motivation for making this combination is to provide a simple way to calculate the distance traveled that would yield accurate results with little chance of error.

2. Claims 3-5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boesch et al. in view of Eckelt and further in view of Okawa et al. (US 5,591,906).

Together Boesch et al. and Eckelt teach all of the limitations of claims 3-5, 7, and 8 except the limitation that the travel distances covered by each of at least four wheels are summed along diagonal groupings relative to the arrangement of the at least four wheels on the vehicle (current claim 3), the step of comparing the sums of travel distances for each diagonal grouping of the at least four wheels and recognizing an insufficient tire pressure when the sums differ from one another by more than a preselected limit value (current claim 4), that the step of determining the travel distances covered by each of at least four wheels is carried out in a plurality of monitoring cycles and further comprising the step of recognizing an insufficient tire pressure condition when deviations of the sums of the travel distances for diagonal groupings of the at least four wheels exceed a preselected limit value for the monitoring cycles (current claim 5), half waves of the pulsed signals are counted in the step of determining the travel distances covered by each of at least four wheels (current claim 7), ascertaining whether the sums for each diagonal grouping of the at least four wheels have one of a positive and negative and zero values, and determining the location of a wheel exhibiting an insufficient tire pressure based on whether the sums are one of positive and negative and zero (current claim 8).

Regarding claim 3, Okawa et al. teaches comparing the rotational angular velocities of a pair of tires on a diagonal line to the rotational angular velocities of another pair of tires on a diagonal line (column 4, lines 17-20).

Regarding claim 4, Okawa et al. teaches the step of comparing the sums of travel distances for each diagonal grouping of the at least four wheels and recognizing an insufficient tire pressure when the sums differ from one another by more than a preselected limit value (column 4, lines 23-26).

Regarding claim 5, Okawa et al. teaches that the step of determining the travel distances covered by each of at least four wheels is carried out in a plurality of monitoring cycles (column 4, lines 36-67 describe a plurality of cycles), and further comprising the step of recognizing an insufficient tire pressure condition when deviations of the sums of the travel distances for diagonal groupings of the at least four wheels exceed a preselected limit value for the monitoring cycles (column 4, lines 23-26).

Regarding claim 7, Okawa et al. teaches that half waves of the pulsed signals are counted in the step of determining the travel distances covered by each of the at least four wheels (column 5, lines 2-9).

Regarding claim 8, Okawa et al. teaches ascertaining whether the sums for each diagonal grouping of the at least four wheels have one of a positive and negative and zero values, and determining the location of a wheel exhibiting an insufficient tire pressure based on whether he sums are one of positive and negative and zero (column 11, lines 50-59). Okawa's definition of dF = 1 is equivalent to the difference equaling zero.

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Boesch et al. and Eckelt with the teachings of Okawa et al. to diagonally sum distances traveled. It would be obvious to measure the diagonals because the influencing of cornering is cancelled by measuring the inner and outer wheels together.

3. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boesch et al. in view of Skoff (US 6,594,566).

Regarding claim 13, Boesch et al. teaches a tire pressure monitoring system for a vehicle having a plurality of wheels, a plurality of axles for supporting the wheels, and an anti-lock braking system including a control unit, the monitoring system comprising wheel sensors on a least one of the wheels of at least one of the axles for sensing attributes associated with wheel rotation (column 2, lines 35-36), the control unit adapted to logically combine the attributes and to evaluate the attributes with respect to change of rolling radii of the wheels and to account for change of the attributes caused by driving operation (column 2, lines 24-27, 32-34), and means for generating a warning signal when the change of the attributes caused by tire pressure decrease exceeds a preselected limit value (column 2, lines 27-28).

Regarding claim 15, Boesch et al. teaches that the attributes associated with wheel rotation are at least one of the travel distances (column 4, line 34) and the rotational speed of the wheels (column 4, lines 32-33).

Boesch et al. does not teach means for directly measuring tire inflation pressure of at least one of the axles to corroborate the change of the attributes caused by tire pressure decrease (current claim 13).

Skoff teaches measuring tire pressure (column 5, line 34) and comparing a calculated tire pressure value to the actual tire pressure (column 6, lines 11-13).

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Boesch et al. with the teachings of Skoff to compare a measured tire pressure value with a calculated value. The motivation for comparing these two values is to have a secondary value to ensure that the calculation is correct.

4. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boesch et al. in view of Skoff as applied to claim 13 and further in view of Eckelt.

Together Boesch et al. and Skoff teach everything claimed in claim 13 except the limitation of receiving signals from the wheel sensors and counting periods of the signals to determine the travel distances covered by the wheels.

Eckelt teaches counting wheel pulses to determine the distance traveled (column 5, lines 22-27).

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Boesch et al. and Skoff with the teachings of Eckelt to use wheel pulses to determine the tire pressure of a vehicle. The motivation for making this combination is to provide a simple way to calculate the distance traveled that would yield accurate results with little chance of error.

5. Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okawa et al. in view of Skoff.

Regarding claim 33, Okawa et al. teaches sensing a value associated with wheel rotation for each of the wheels (column 4, lines 10-12), summing the value along diagonal groupings of the wheels relative to the arrangement of the wheels on the vehicle (column 4, lines 17-20), comparing the sums of the values for each diagonal grouping of the wheels (column 4, lines 20-22), recognizing an insufficient tire pressure condition (column 4, lines 22-26), and generating a warning signal when the sums differ from one another by more than a preselected limit value (column 19, lines 19-22).

Regarding claim 34, Okawa et al. teaches ascertaining whether the sums for each diagonal grouping of the at least four wheels have one of a positive and negative and zero values, and determining the location of a wheel exhibiting an insufficient tire pressure based on whether he sums are one of positive and negative and zero (column 11, lines 50-59). Okawa's definition of dF = 1 is equivalent to the difference equaling zero.

Regarding claim 35, Okawa et al. teaches that the step of sensing the value associated with wheel rotation is carried out in a plurality of monitoring cycles (column 4, lines 36-67 describe a plurality of cycles), and further comprising the step of recognizing an insufficient tire pressure condition when deviations of the sums of the travel distances for diagonal groupings of the at least four wheels exceed a preselected limit value for the monitoring cycles (column 4, lines 23-26).

Okawa et al. does not teach measuring the tire inflation pressure of at least one of the wheels of at least one of the axles utilizing a tire pressure measuring apparatus or comparing the tire inflation pressure with a preselected setpoint pressure (current claim 33).

Skoff teaches measuring tire pressure (column 5, line 34) and comparing the tire pressure to a setpoint (column 6, lines 11-13).

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Okawa et al. with the teachings of Skoff to directly measure the tire inflation pressure. The motivation for doing this would be to have a secondary value to serve as a comparison to get more accurate results.

6. Claims 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okawa et al. in view of Skoff as applied to claim 33 and further in view of Eckelt.

Regarding claim 39, Okawa et al. teaches that half waves of the pulsed signals are counted in the step of determining the travel distances covered by each of the at least four wheels (column 5, lines 2-9).

Together Okawa et al. and Skoff teach all of the limitation of claim 37 except the limitation that the step of sensing a value associated with wheel rotation for each of the wheels includes sensing wheel sensor signal pulses associated with wheel rotation of each of the wheels and counting the wheel sensor signal pulses of each of the wheels to determine travel distance covered by each of the wheels.

Eckelt teaches counting wheel pulses to determine the distance traveled (column 5, lines 22-27).

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Okawa et al. and Skoff with the teachings of Eckelt to use wheel pulses to determine the tire pressure of a vehicle. The motivation for making this combination is to provide a simple way to calculate the distance traveled that would yield accurate results with little chance of error.

Allowable Subject Matter

7. Claims 16-19, 27-29 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The primary reason for the allowance of claim 16 is the inclusion of the limitation that the tire pressure measuring system includes at least one wheel electronics package having a pressure sensor and an HF transmitter for transmitting the measured tire inflation pressure, a receiver/evaluation device for receiving the measured tire inflation pressure and comparing the tire inflation pressure with the preselectd setpoint pressure, and means for generating a warning signal when the difference between the tire inflation pressure and setpoint pressure exceeds a preselected threshold value. It is this limitation that is in the claimed combination that has not been found, taught, or suggested in the prior art that makes these claims allowable.

8. Claims 20-26 and 30 are allowed.

The following is an examiner's statement of reasons for allowance: Please see previous office action for reasons for allowance.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments with respect to claims 1 and 13 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments, see paper 7, filed 8/7/03, with respect to the rejection(s)of claim(s) 14 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the combination between the Boesch et al. reference and the Skoff reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meagan S Walling whose telephone number is (703) 308-3084. The examiner can normally be reached on Monday through Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703) 308-3126. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

msw

John Barlow
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